

Figure 1

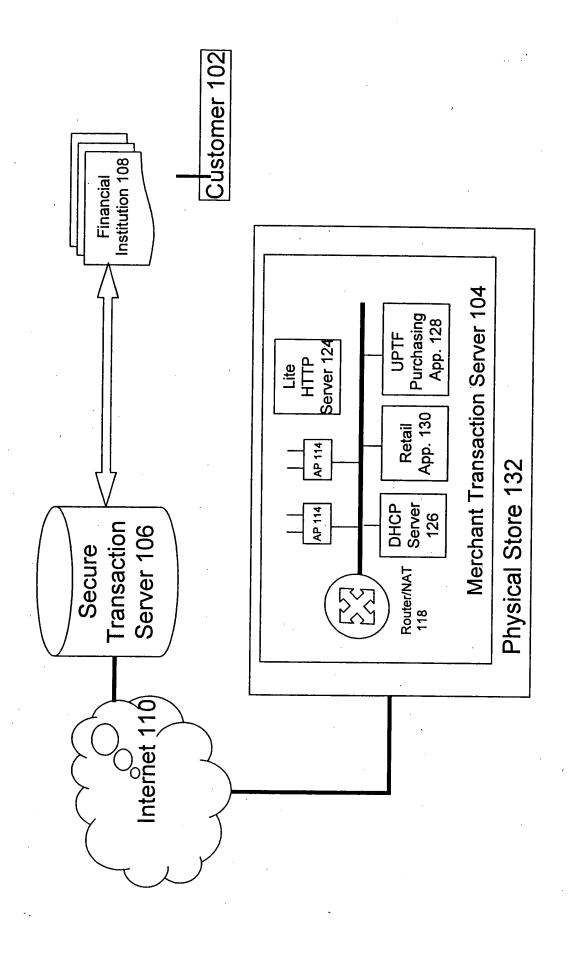


Figure 2

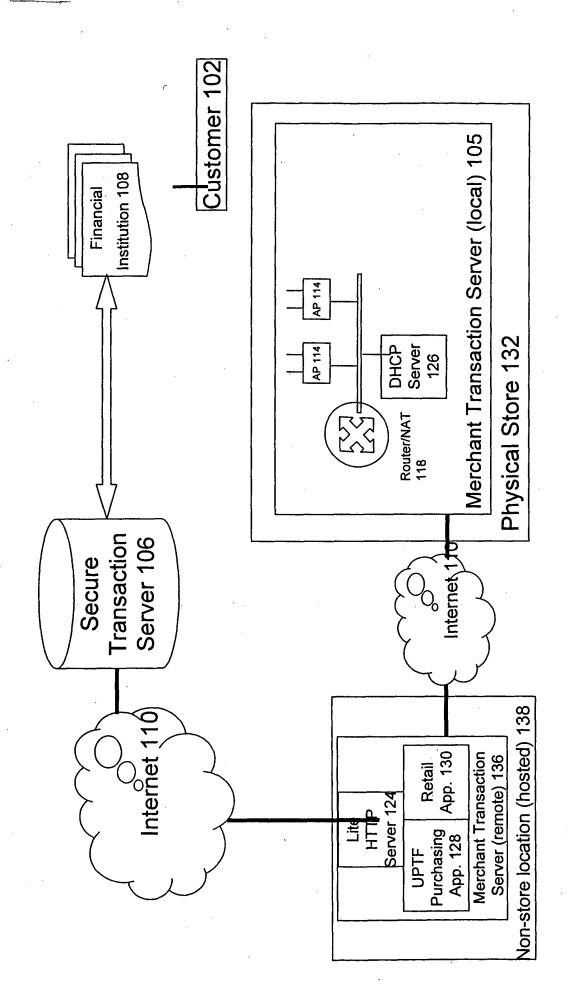


Figure 3

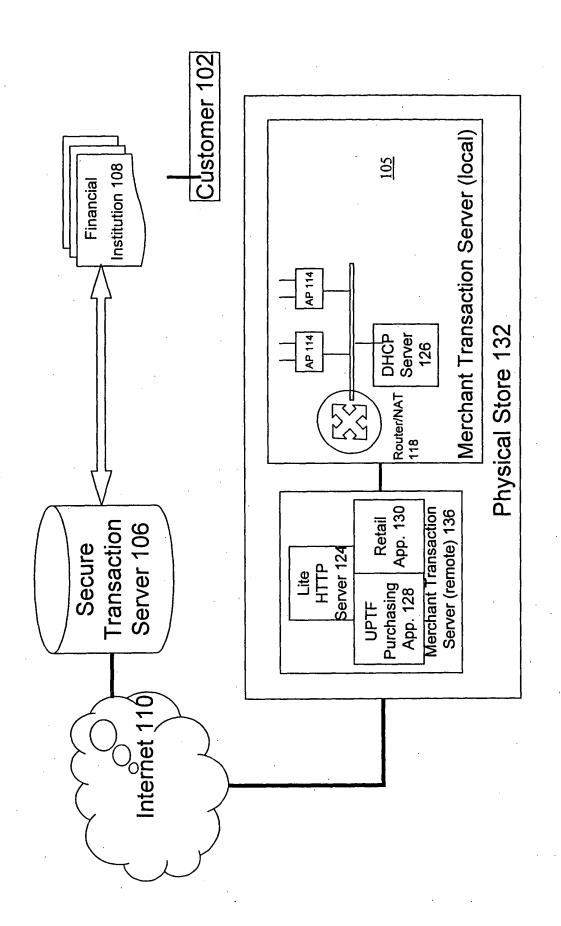


Figure 4

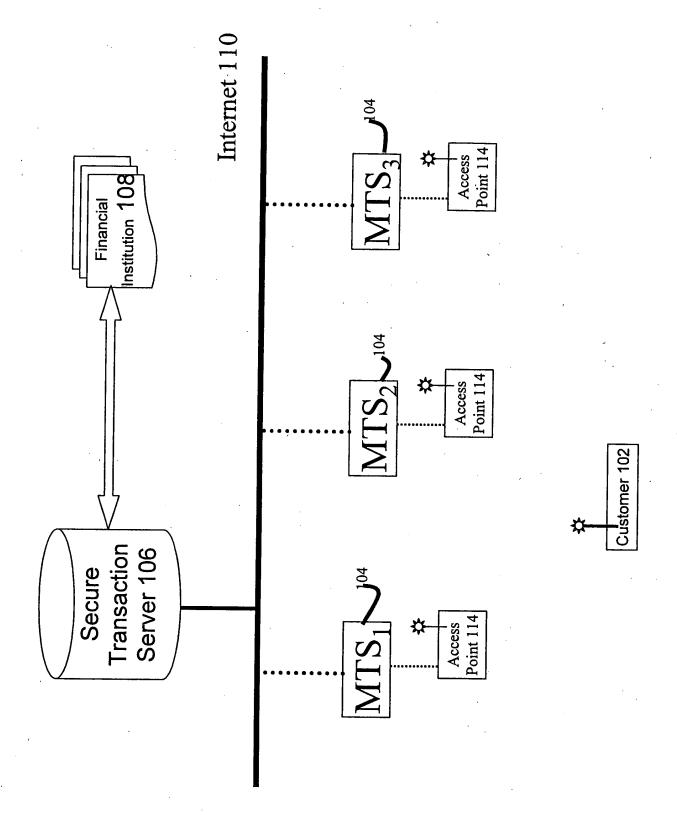
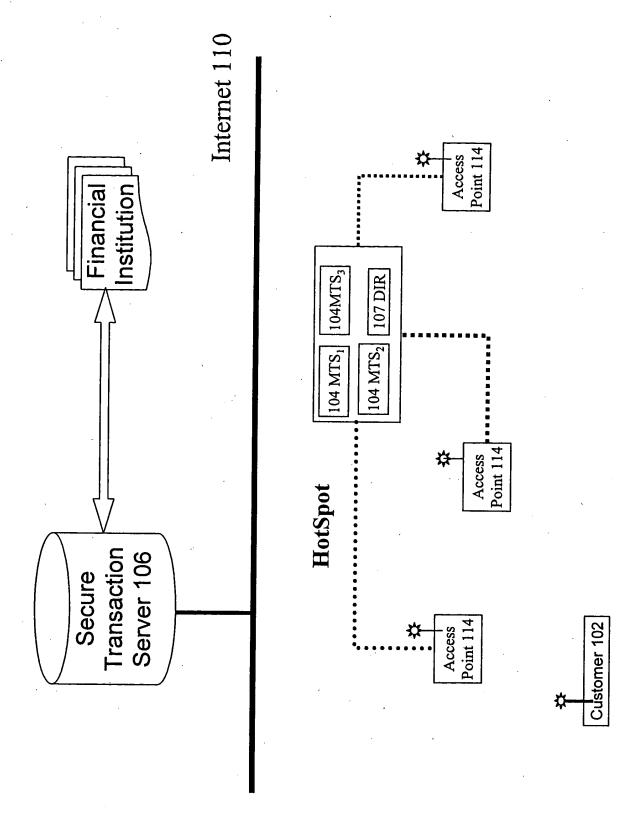


Figure 5



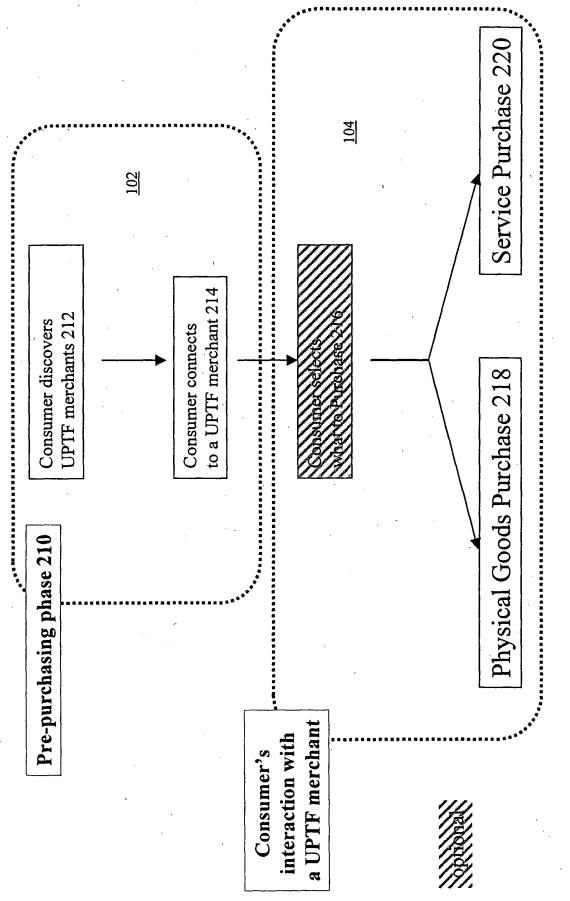


Figure 7

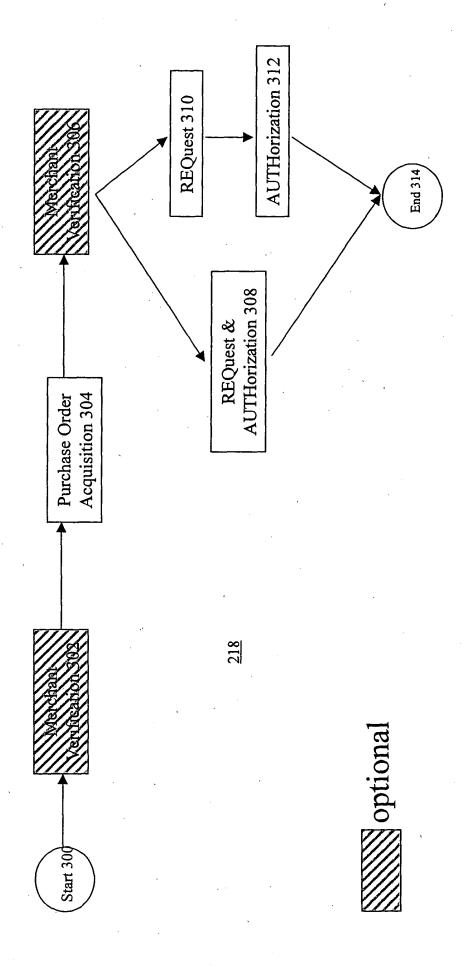


Figure 8

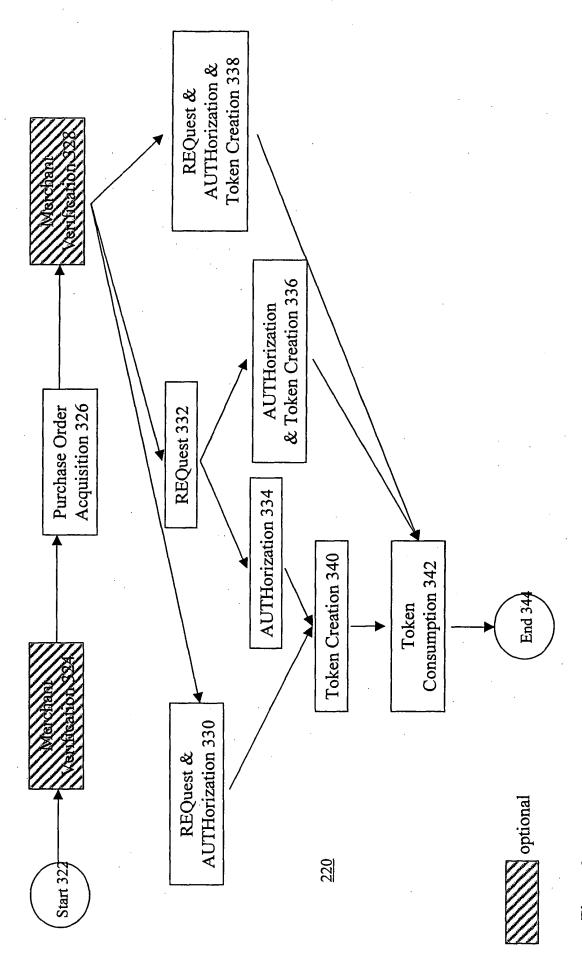


Figure 9

Direct Purchase Order Exchange

Figure 10

Purchase Order Request

Figure 11

Purchase Order Request from STS

Figure 12

Figure 13

Figure 14

AUTHorization (includes payment)

Figure 15

| STS 106 | | zation _C + | UTHorizations ecute on | | | _ |
|--------------|---|--|---|--|---------------------------|-------|
| Š | 362 | REQuestandAUTHorization _C + REQuestandAUTHorization _M | STS verifies merchant and consumer REQuestandAUTHorizations and decides on whether to execute (no subsequent AUTHorization is necessary) the transaction with the financial institution and responds accordingly to merchant and consumer | | | |
| Merchant 104 | | Merchant generates its transaction view REQuestandAUTHorization _M & forwards its and consumer's transaction view to STS | e Igenent | Merchant keeps its response from STS and forwards STS' response to the consumer STS response to the consumer | | |
| Merc | REOnestandAUTHorization | | | | STS response | |
| Consumer 102 | Consumer generates its transaction view | | | STS response (ACKnowledgenent or FAILure_ | Client verifies the STS r | 91 |
| Co | Single s REQue | _ | AUTHorizati | on (inclu | des payn | nent) |

Figure 17

Figure 18

Token Creation

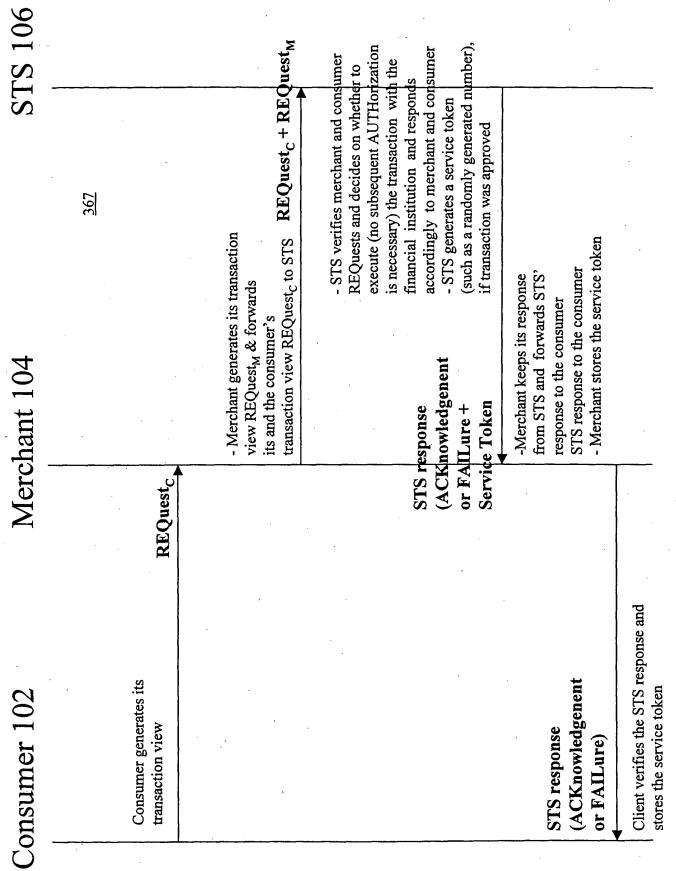
Figure 19

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Merchant 104

Consumer 102

| , | | | | |
|-----------|--|----------------------|---|-------|
| Si | Loken | | Merchant generates service token with timestamp | |
| ngle s | Consumer generates its transaction view Consumer may generate at this time | | 396 | |
| step | a token certificate (encrypt the token for the token's timestamp) | REQuest _c | | |
| REÇ | | | Merchant generates its transaction view REQuest_M & forwards its and the consumer's | |
| uest, A | | | transaction view REQuest _c to STS - Merchant requests from STS a - Merchant requests from STS a - HEQuest _C + REQuest _M - transaction view REQuest _C + REQuest _M | |
| AUTHo | | | - STS verifies merchant and consumer REQuests and decides on whether to execute (no subsequent AUTHorization | |
| rizatio | | STS | · | • |
| on and | | Or FA Toker | (ACK)nowledgenent - STS generates a certificate for the service token (encrypted with Token certificate consumer's key), if transaction was approved | roved |
| l Tok | | | -Merchant keeps its response from STS and forwards STS' | |
| en Cr | STS response (ACKnowledgenent or FAILure) | | response to the consumer STS response to the consumer - Merchant stores token certificate | |
| eatic | Client verifies the STS response | | | · |
| rigure 20 | 20 | | | |



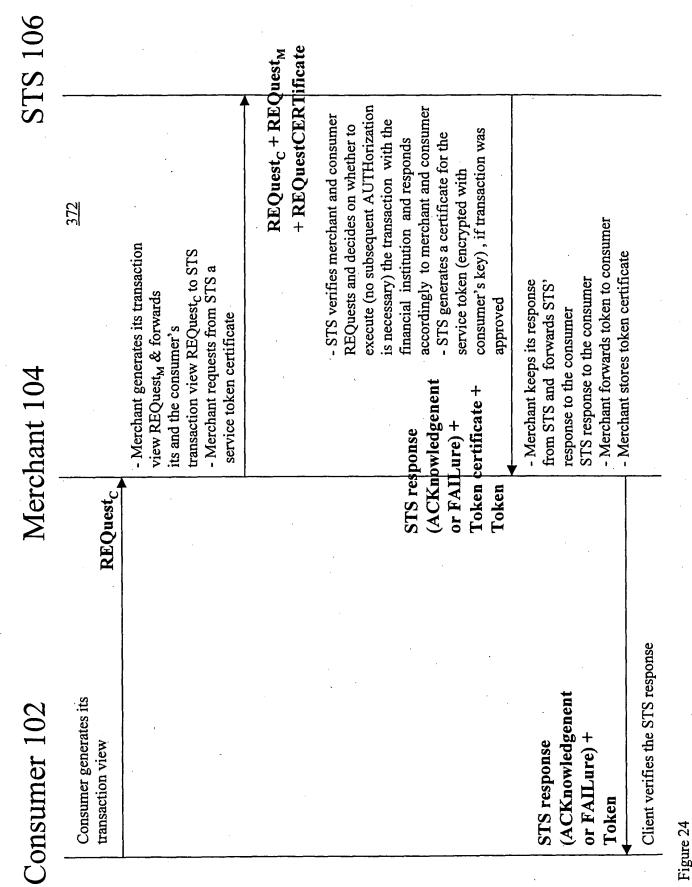
Single step REQuest, AUTHorization and Token Creation

| Consumer 102 | Merchant 104 | STS 10 |
|--|--|--------|
| | 368 | |
| REQuestTokenCerificate | Merchant requests service token certificate (for the timestamp of the STS-received token certificate) | |
| Consumer generates token certificate (encrypts the previously received token with the key that corresponds to the timestamp of the merchant's request) If the certificate has been encrypted already, consumer just submits it Token Certificate | rtificate | |
| Merchant response (ACKnowledgenent or FAILure) | Merchant compares the token certificate with the locally stored, previously generated (by the STS) token certificate for the specific consumer | |
| | Merchant provides service to the consumer | |
| | | |

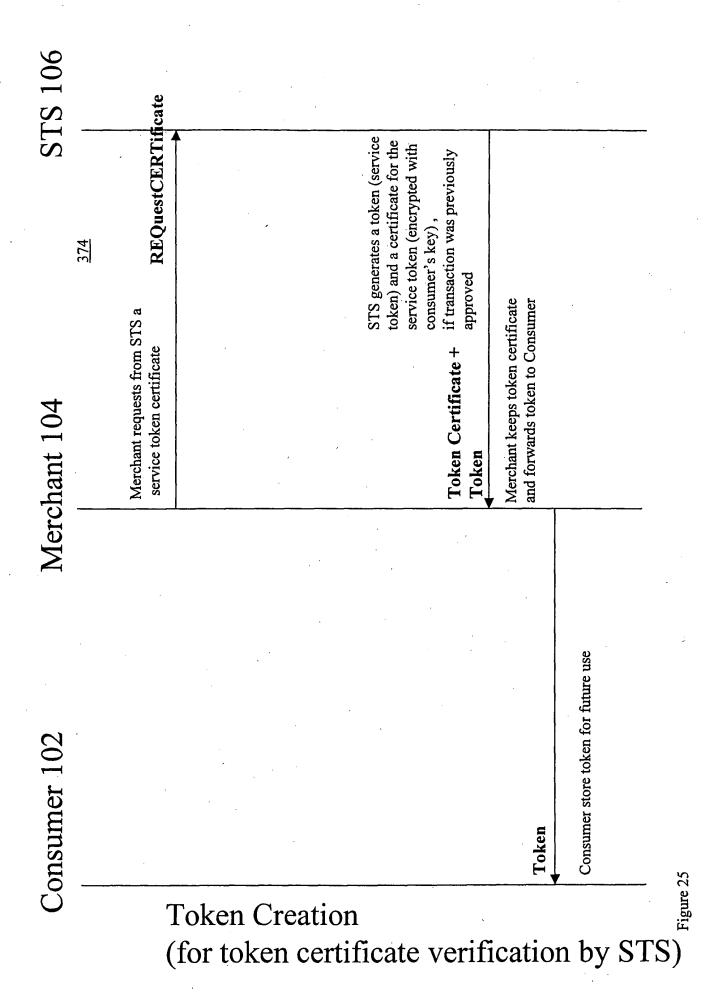
Service Token Verification and Consumption

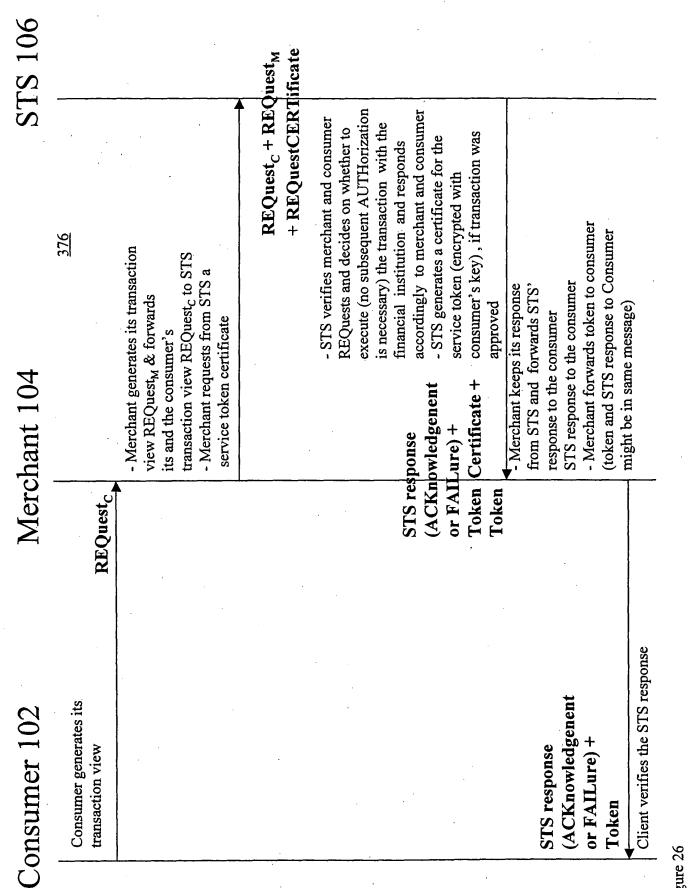
Token Creation

Figure 23



Single step REQuest, AUTHorization and Token Creation (for token certificate verification by STS)





Single step REQuest, AUTHorization and Token Creation (for token certificate verification by STS)

Service Token Consumption (Verification by Merchant only)

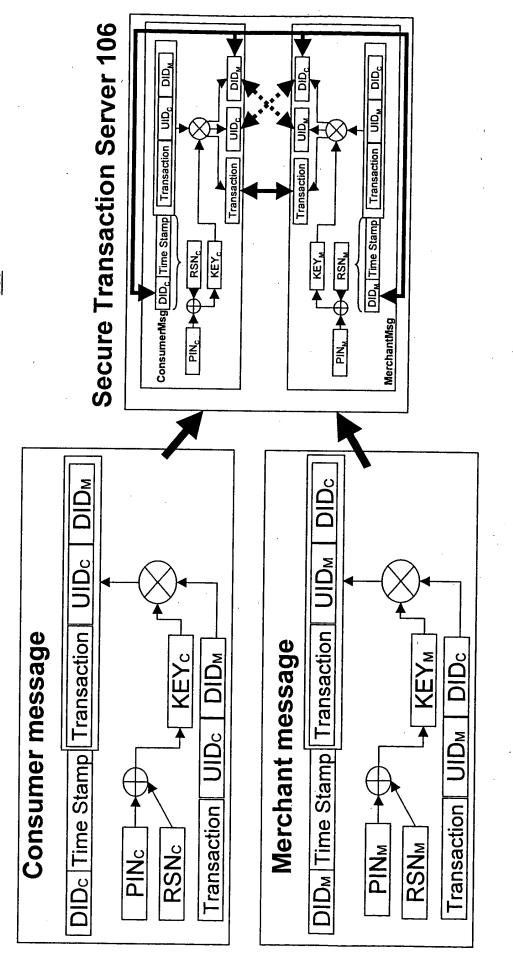


Figure 29

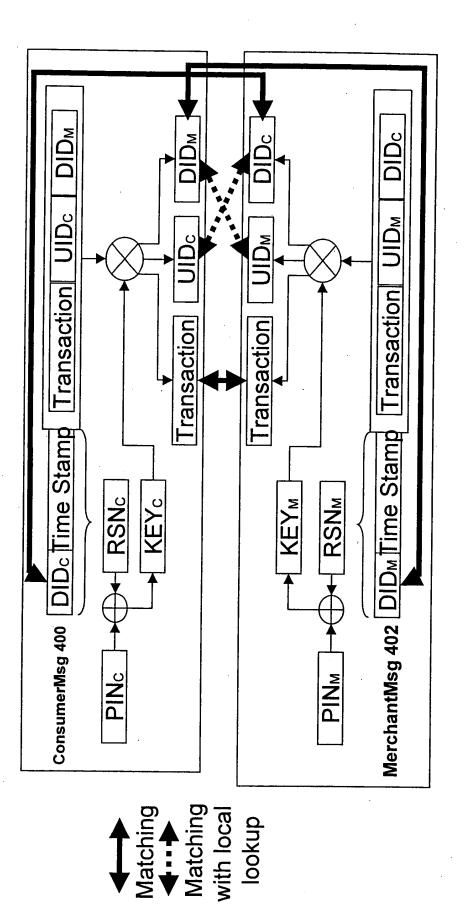


Figure 30

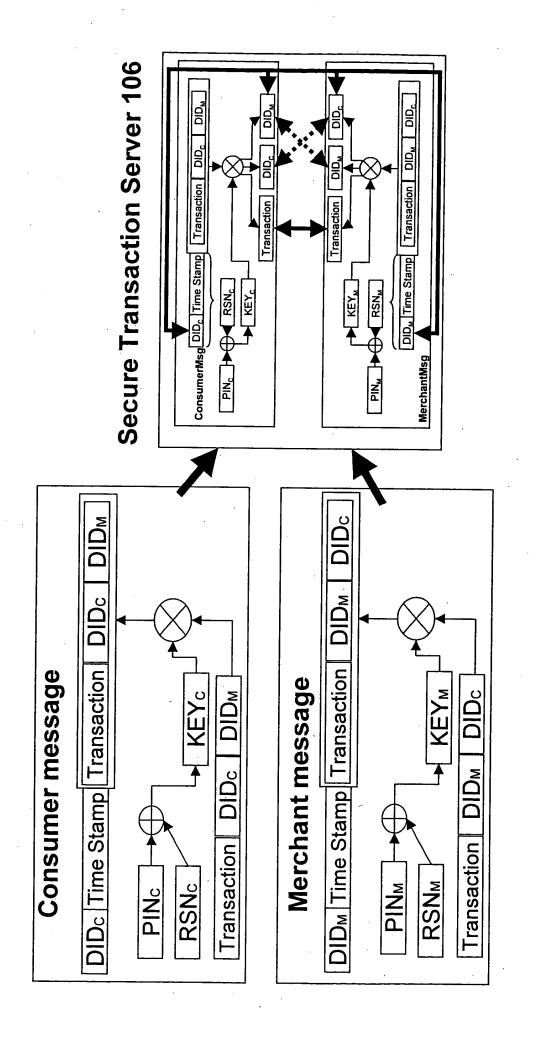


Figure 31

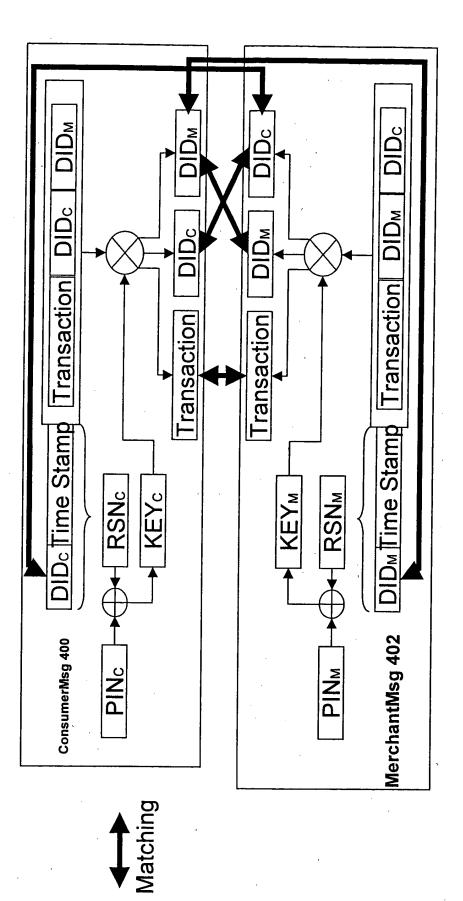
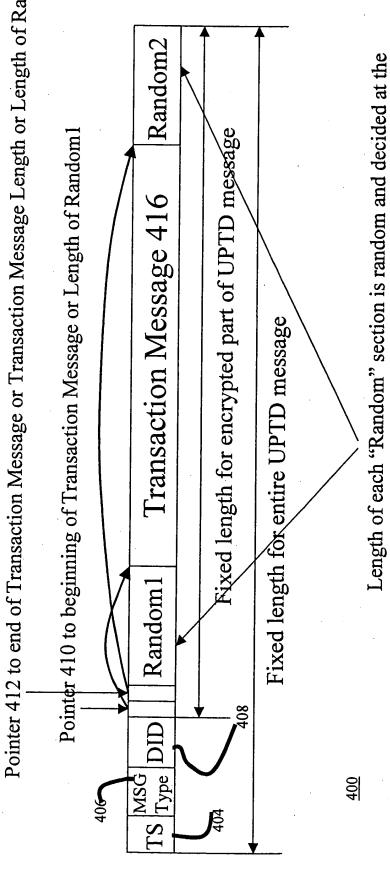


Figure 32



time of message composition.

414: Random 1

418: Random 2

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| Q | |
| C | |
| B | |
| A | |

A: Message type (REQuest or AUTHorization; REQuest in this case)

B: Success Code for response to this messageC: Failure Code for response to this message

D: DID of message sending device

E: DID of other transacting party's device

F: Transaction amount or some other agreed transaction description

F is optional and might be specified in AUTHorization message G: Friendly name of account to be used to pay D's user, amount E

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| C | |
| B | |
| A | |

A: Message type (REQuest or AUTHorization; REQuest in this case)

B: Success Code for response to this message

C: Failure Code for response to this message

D: DID of message sending device

E: DID of other transacting party's device

F: Transaction amount or some other agreed transaction description

A B C

A: The Success or Failure code indicated by Payer depending on whether the REQuest was successful or not B: A randomly generated number to be used to refer to the transaction for the remainder of the change

C: Payer's account listing

A B

A: The Success or Failure code indicated by Payer depending on whether the REQuest was successful or not B: A randomly generated number to be used to refer to the transaction for the remainder of the exchange

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| D | |
| C | |
| B | |
| A | |

A: Message type (REQuest or AUTHorization; AUTHorization in this case)

B: Success Code for response to this message

C: Failure Code for response to this message

D: A reference to the transaction been authorized; a previously STS-generated reference is used

E: Optional to reference payer's account if not previously specified

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| B | |
| A | |

A: Message type (REQuest or AUTHorization; AUTHorization in this case)

B: Success Code for response to this message

C: Failure Code for response to this message

D: A reference to the transaction been authorized; a previously STS-generated reference is used

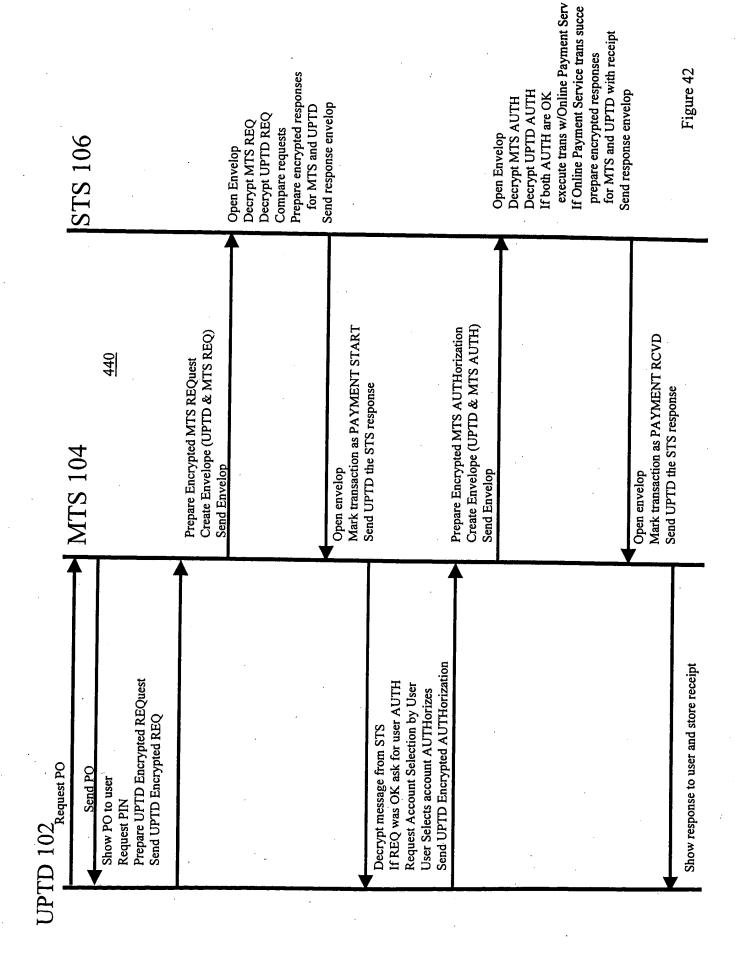
E: Optional to reference payee's account if not previously specified

AB

A: The Success or Failure code indicated by Payer depending on whether the Authorization was successful or not B: An optional additional description, for example a service token value (receipt)

AB

A: The Success or Failure code indicated by Payee depending on whether the Authorization was successful or not B: An optional additional description, for example a service token value (receipt)



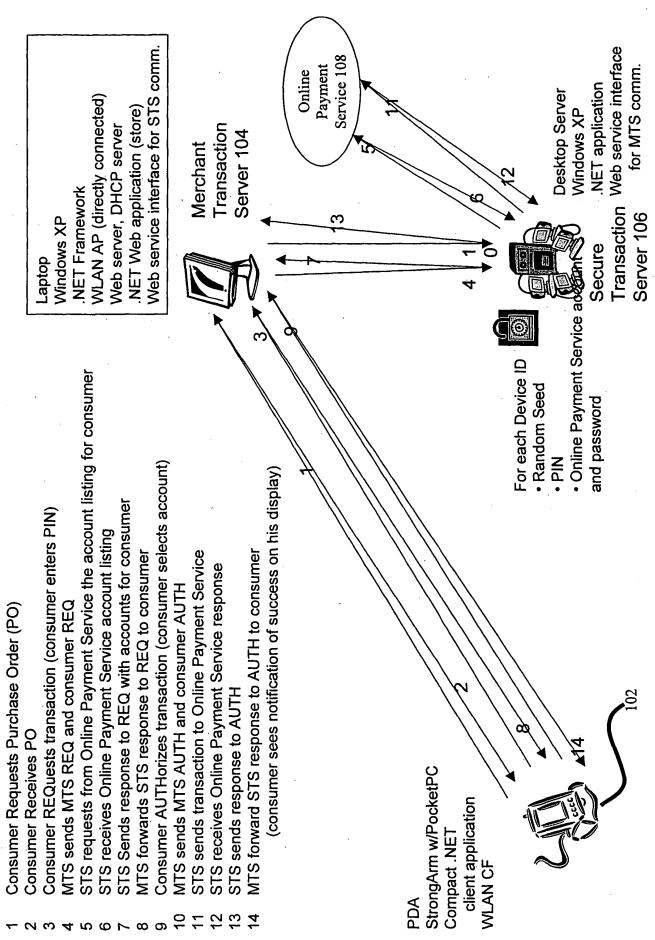


Figure 43

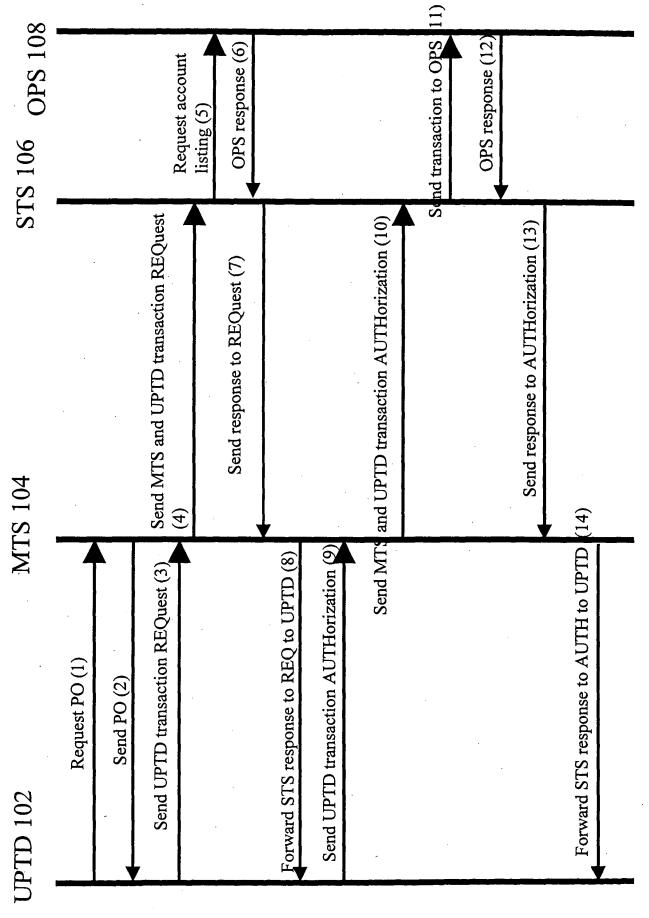


Figure 44

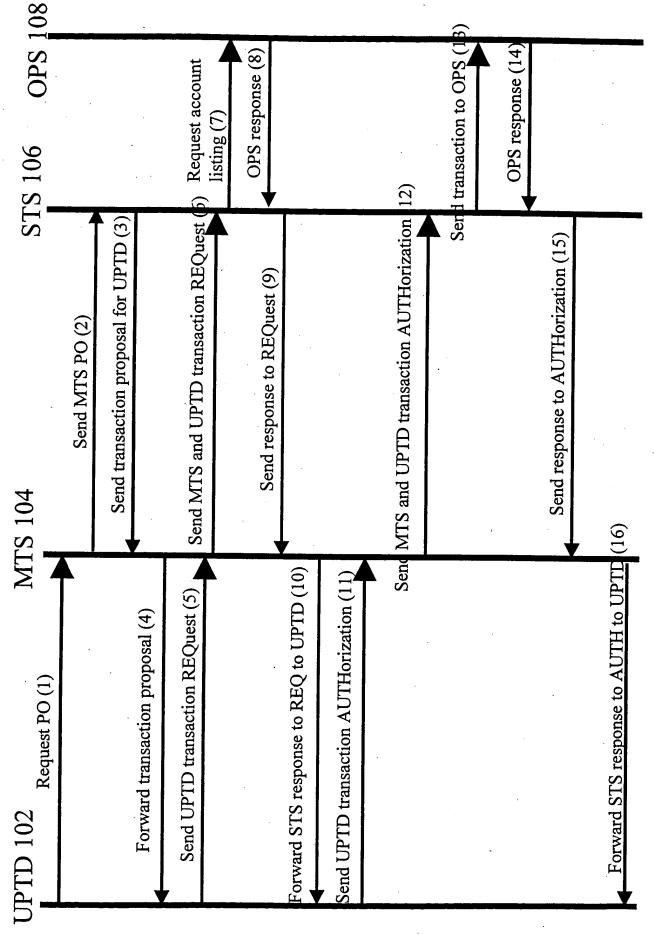


Figure 45

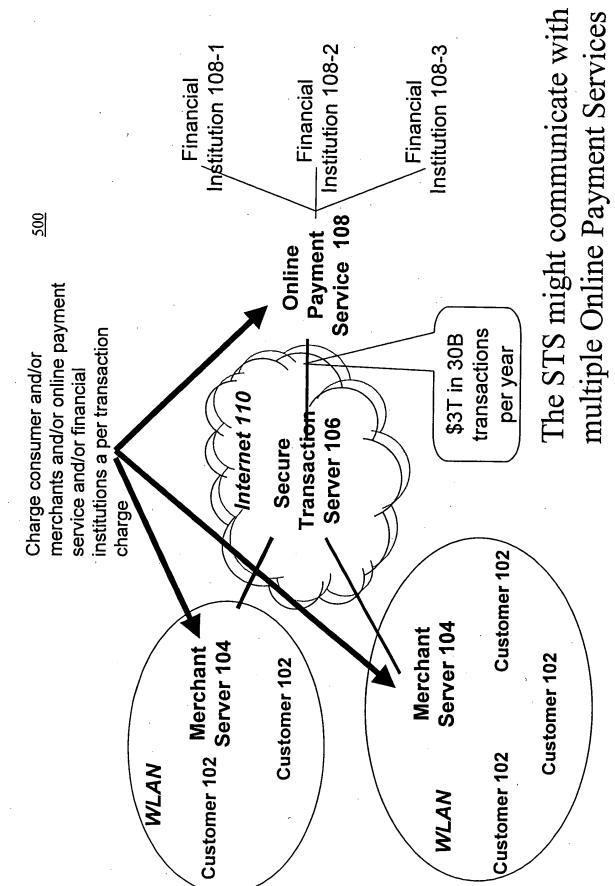


Figure 46

Figure 4

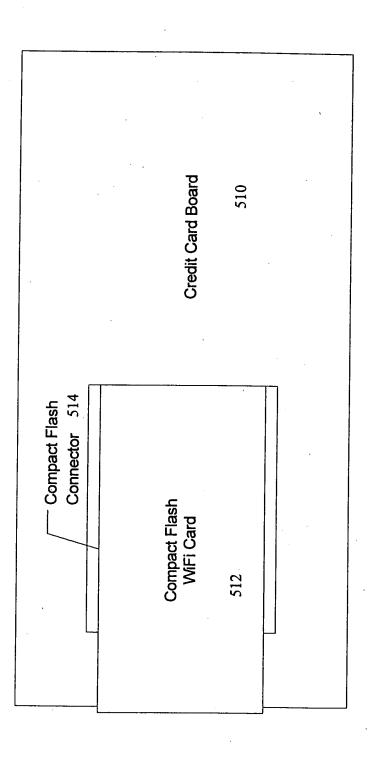


Figure 48

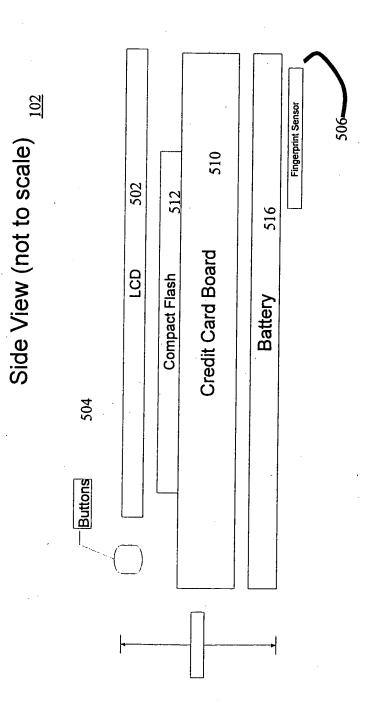
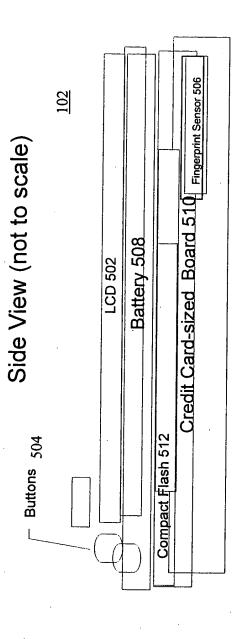
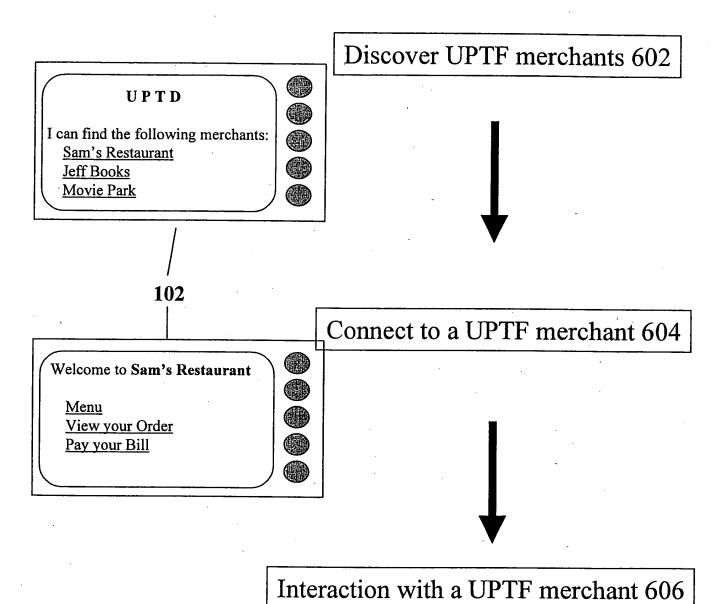


Figure 4



Pre-purchasing phase, example 600



Physical Goods Purchase I, example <u>610</u>

Purchase Order Acquisition 612 Sam's Restaurant Select which table you want to pay for 1 2 3 4 5 6 7 8 102 Sam's Restaurant Your bill for table 3 is \$34.58 When you are ready to pay, PRESS the PAY button on your device REQuest 614 UPTD If you want to pay \$34.58 to Sam's Restaurant on Mon, Sept. 1, 2003, 6:54 PM enter PIN and select Continue 1 2 3 4 Continue Cancel **AUTHorization 616** UPTD Select one of your accounts to

authorize the payment
AllFirst Visa
Discover

Bank of America bankcard

Cancel

Figure 52

Physical Goods Purchase I, example, variation <u>620</u>

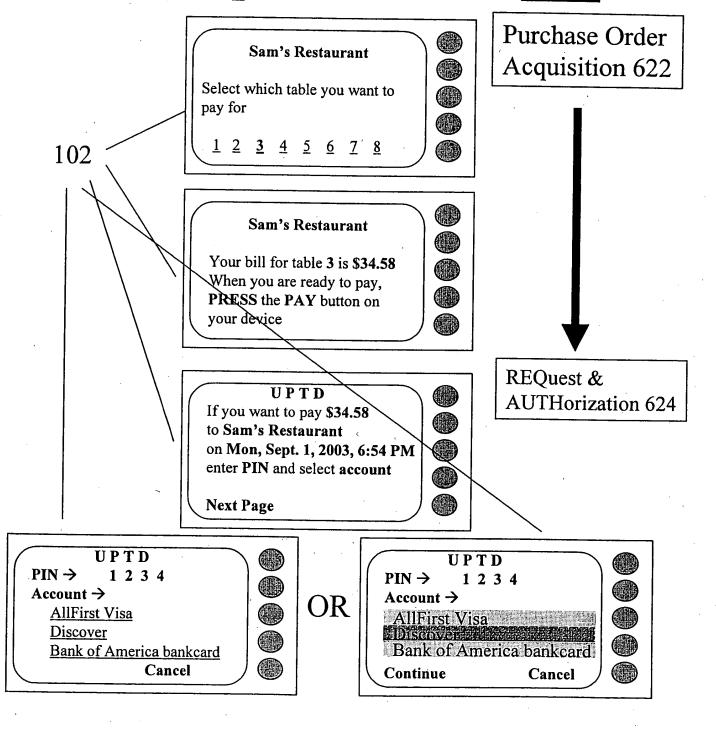


Figure 53

Physical Goods Purchase II, example 630

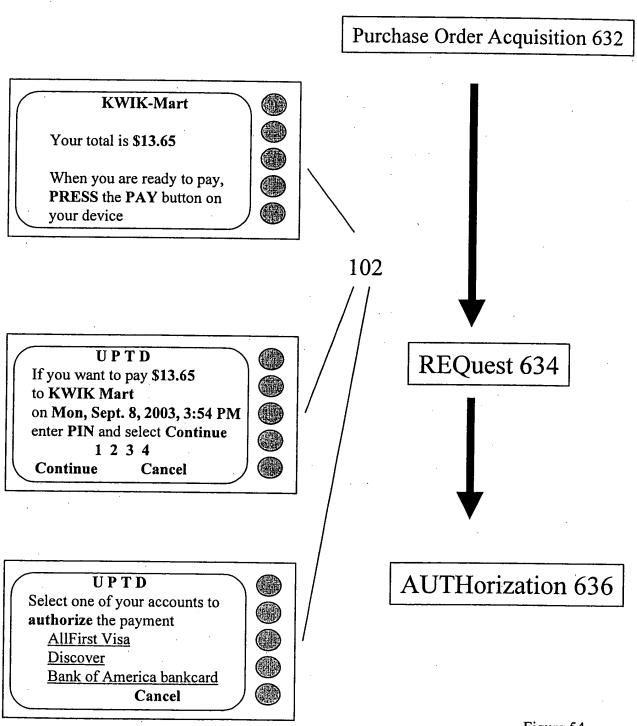
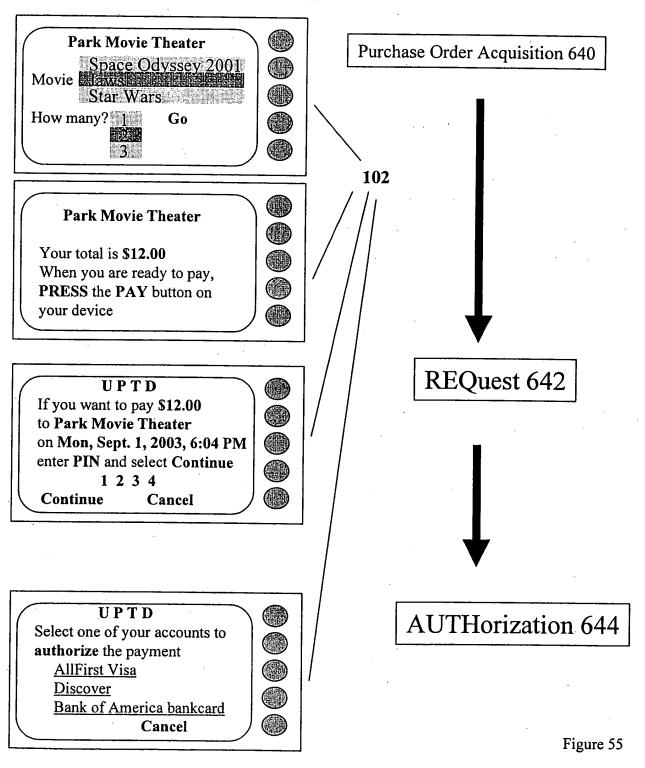
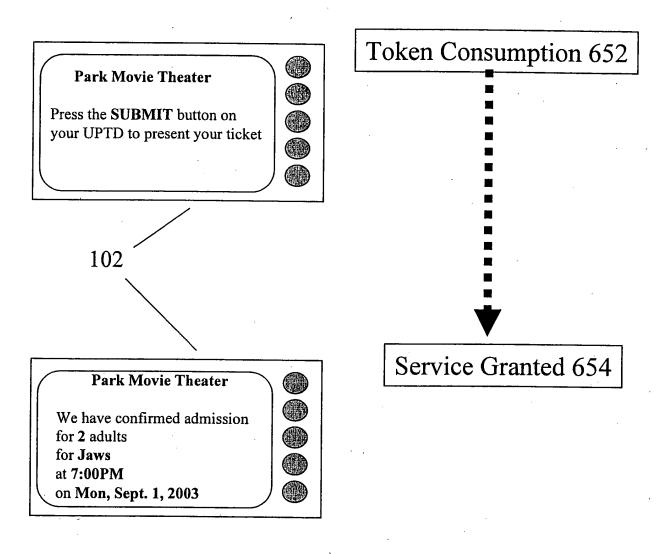


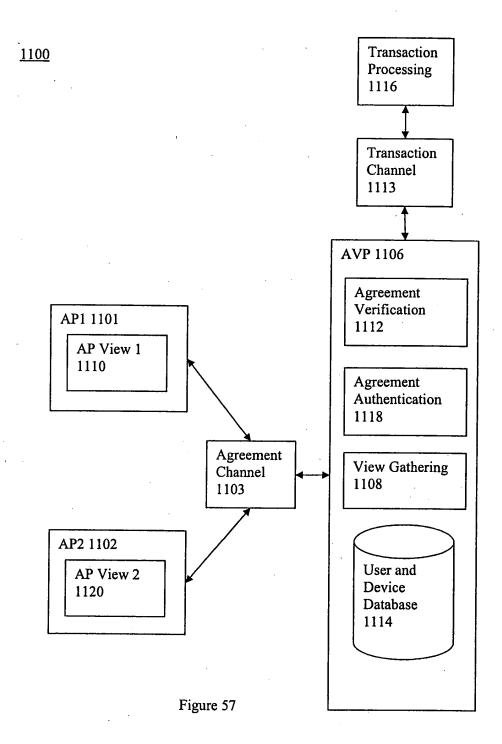
Figure 54

Service Purchase I, example <u>638</u>



Service Purchase I – token verification and consumption, example <u>650</u>







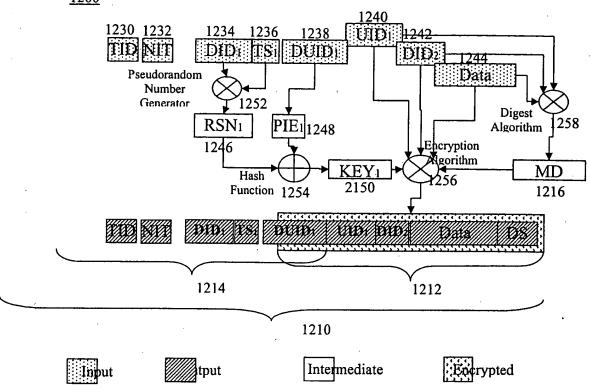


Figure 58

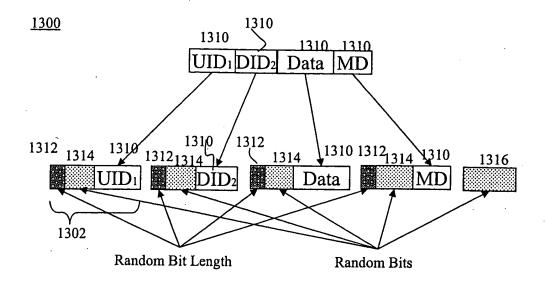


Figure 59

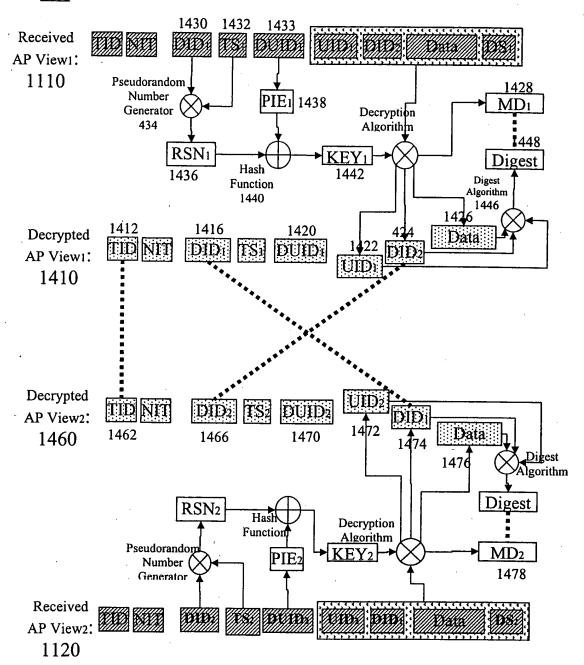


Figure 60

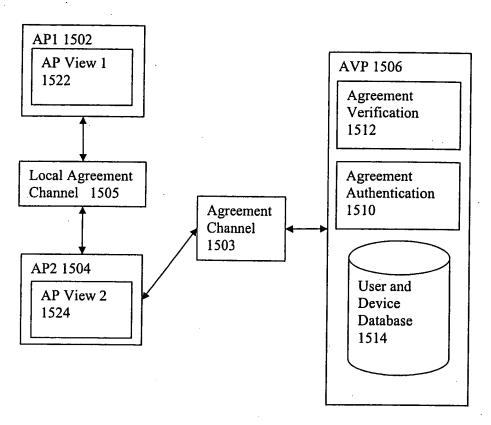


Figure 61

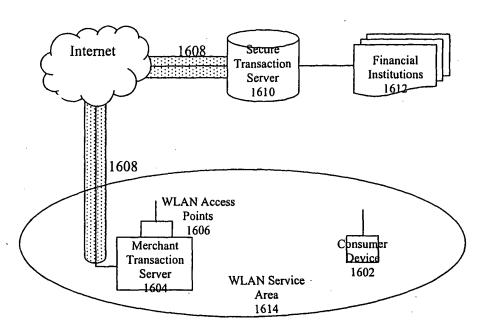


Figure 62

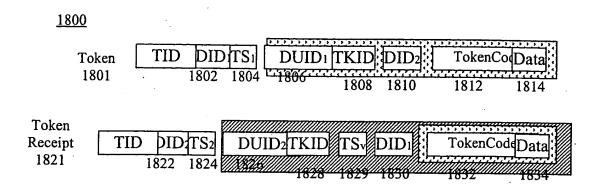


Figure 63